

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
14 October 2004 (14.10.2004)

PCT

(10) International Publication Number
WO 2004/088768 A2

(51) International Patent Classification⁷:**H01M**

(74) Agent: REITSTÖTTER, KINZEBACH & PARTNER (GBR); Sternwartstrasse 4, 81679 München (DE).

(21) International Application Number:

PCT/EP2004/003424

(22) International Filing Date: 31 March 2004 (31.03.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

MI2003 A 000644 1 April 2003 (01.04.2003) IT

(71) Applicant (for all designated States except US): NUVERA FUEL CELLS EUROPE S.R.L. [IT/IT]; Via Bistolfi, 35, I-20134 Milano (IT).

(72) Inventors; and

(75) Inventors/Applicants (for US only): TRIFONI, Eduardo [IT/IT]; Via Donizetti, 5, I-80127 Napoli (IT). FAITA, Giuseppe [IT/IT]; Via Rivolta, 15, I-28100 Novara (IT). FLEBA, Gian Piero [IT/IT]; Via F. Villa, 6, I-20134 Milano (IT). LENARDON, Matteo [IT/IT]; Via Unione, 2, I-22074 Lomazzo (IT). LIOTTA, Marcello [IT/IT]; Via della Cooperazione, 117, I-20089 Rozzano (IT). JACOBO, Rubén, Ornelas [IT/IT]; Via Gorki, 20, I-20098 San Giuliano Milanese (IT). RAMUNNI, Enrico [IT/IT]; Via Jannozzi, 40, I-20097 San Donato Milanese (IT). TRAINI, Fabio [IT/IT]; Via Pisani Dossi, 31, I-20134 Milano (IT).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

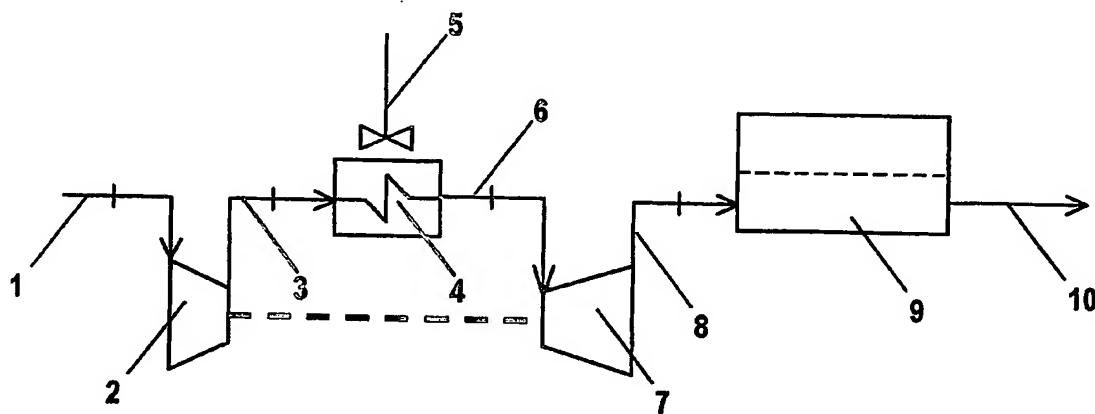
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD FOR OPERATING A MEMBRANE ELECTROCHEMICAL GENERATOR



WO 2004/088768 A2

(57) Abstract: The present invention describes a membrane fuel cell stack characterised by a stable operation under non-humidified gas feeds, and in particular under non humidified air feed at near ambient pressure, even at high current density. This result is obtained by means of an air feed conditioning device comprising a fan or little compressor, a heat exchanger directed to cool the compressed air and an expander allowing to cool the air while recovering part of the energy consumed by the fan.